Ordered K-theory
(The theory of additive and non-negative invariants for rings and modules.)

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Timetable: 16 hrs. First lecture on March 9, 2015, 14:00 (dates already fixed, see the calendar), Torre Archimede, Room 2BC/30.

Course requirements: Basic notions on module categories and homological algebra.

Examination and grading:

SSD: MAT/

Course contents:

Ultimately we only understand our objects in terms of invariants, usually real or integer valued: Cardinality, Length, Volume, Area, Probability, Weight, Dimension, Rank, State, Euler characteristic, Multiplicity, Entropy, etc. All these are non-negative and have an additive property: the value of the whole is the sum of the values of its parts or sub and factor. The generic object for these functions is the object of study of these lectures: the K-group (Grothendieck group) equipped with a natural partial order.

Tentative plan of topics:

3. Links with functional analysis: Elliotts theorem (KO is a complete invariant for certain C* algebras). von Neumann regular rings

There are lots opportunities for further research and open problems, these will be stated as we go along.